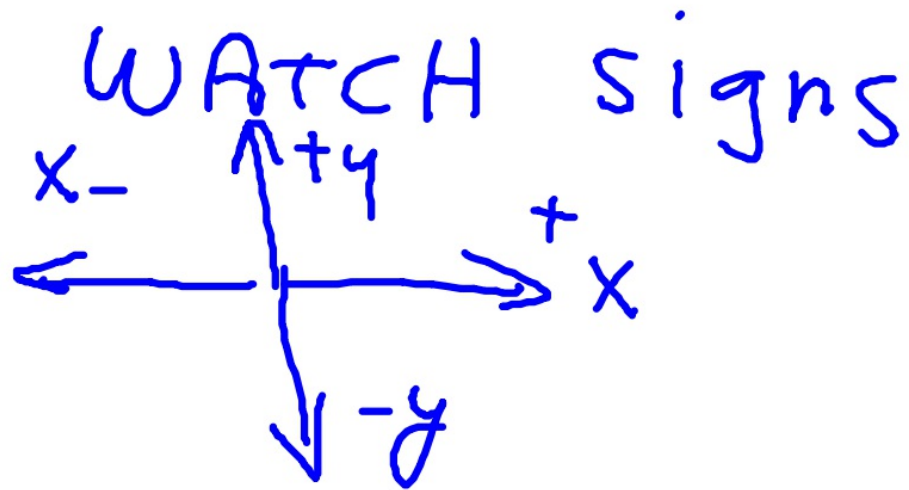


IMPULSE - Change in momentum
 $\uparrow \Delta P \curvearrowright$

UNITS $\text{kg}\cdot\text{m/s}$

VECTOR = have a direction



~~$$\Delta P = F \Delta t$$~~

$$\Delta P = F \Delta t$$

FORCE \uparrow \swarrow CONTACT TIME
 \searrow



JOHN HITS A HOCKEY PUCK
WITH A FORCE OF 50 N WEST
THE CONTACT TIME IS .25 S.

WHAT IS THE IMPULSE ON THE
HOCKEY PUCK?

$$F = 50 \text{ N W}$$

$$\Delta t = .25 \text{ s}$$

$$\Delta P = ?$$

$$\Delta P = F \Delta t$$

$$\Delta P = (50 \text{ N W})(.25 \text{ s})$$

$$= 12.5 \text{ kg m/s W}$$

$$\boxed{\Delta P = m \Delta v}$$

$$m = .5 \text{ kg}$$

$$\Delta P = 12.5 \text{ kg m/s W}$$

$$\Delta v = ?$$

$$\frac{12.5 \text{ kg m/s W}}{.5 \text{ kg}} = \frac{(.5 \text{ kg})(\Delta v)}{.5 \text{ kg}}$$

$$\Delta v = \frac{12.5 \text{ m/s W}}{.5} = 25 \text{ m/s W}$$

PUCK WAS STOPPED BEFORE
JON HIT IT.

$$\Delta v = \underbrace{v_f}_{\text{FINAL velocity}} - \underbrace{v_i}_{\text{INITIAL velocity}}$$

$$25 \text{ m/s W} = v_f$$

$$v_i = 0$$

$$\Delta v = 25 \text{ m/s W}$$

$$v_f = ?$$

$$v_f = 25 \text{ m/s W}$$

the puck initially WAS GOING
10 m/s EAST.
WHAT is the final velocity

$$\Delta v = 25 \text{ m/s W} \quad v_f = ?$$

$$v_i = 10 \text{ m/s E}$$

$$\Delta v = v_f - v_i \quad \text{E}$$

$$\begin{array}{rcl} 25 \text{ m/s W} & = & v_f - (-10 \text{ m/s}) \\ -10 \text{ m/s} & & +10 \text{ m/s} \quad -10 \text{ m/s} \end{array}$$

$$\hline 15 \text{ m/s W} = v_f$$